

# Five new prawn-associated gobies (Teleostei : Gobiidae) of the genus *Amblyeleotris*

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## Synopsis

Five new species of prawn-associated gobies belonging to the genus *Amblyeleotris* Bleeker are described: *A. rhyax* from the Philippines and Bismarck Archipelago, *A. callopareia* and *A. macronema* from the Great Barrier Reef, *A. latifasciata* from the Gulf of Thailand and Philippines, and *A. diagonalis* from various localities in the Indian Ocean and Western Pacific.

## Introduction

The genus *Amblyeleotris* Bleeker is close to *Cryptocentrus* Ehrenberg and includes approximately twenty species of gobies found in association with alpheid prawns in the Indo-Pacific region (Hoese & Steene, ms.; Polunin & Lubbock, in press).

The purpose of the present study is to provide descriptions of five previously unrecorded species: *Amblyeleotris rhyax* from the Philippines and Bismarck Archipelago, *A. callopareia* and *A. macronema* from the Great Barrier Reef, *A. latifasciata* from the Gulf of Thailand and Philippines, and *A. diagonalis* from various localities in the Indian Ocean and Western Pacific.

Methods of description follow Polunin & Lubbock (1977). Type specimens are deposited at the British Museum (Natural History), London (BMNH), the Australian Museum, Sydney (AMS), the National Museum of Natural History, Washington (USNM), the Muséum d'Histoire Naturelle, Genève (MHNG), and the Bernice P. Bishop Museum, Honolulu (BPBM).

### *Amblyeleotris rhyax* n. sp.

(Fig. 1)

#### MATERIAL EXAMINED

(a) Holotype, 63.7 mm S.L. (standard length), in sandy gully amongst coral at 35 m depth, Nodup, near Rabaul, New Britain, Bismarck Archipelago, coll. R. Lubbock on 1.8.1975; BMNH 1978.2.28.8.

(b) Paratype, 72.5 mm S.L. (ripe ♀), rubble near cave at 35–45 m depth, Nodup, near Rabaul, New Britain, Bismarck Archipelago, coll. R. Lubbock & B. Parkinson on 29.7.1975; USNM. 218978. (c) Paratype, 70.0 mm S.L., 30° rubble slope at 35 m depth, Maribago, Mactan Island, Cebu Strait, Philippine Islands, coll. R. Lubbock on 6.8.1976; AMS. I.20688–001.

DESCRIPTION. Dorsal fin rays VI+I 12 (last ray divided to base); anal fin rays I 12 (last ray divided to base); pectoral fin rays 19–20; pelvic fin rays I 5. 66–71 rows of scales in lateral series from dorsal angle of branchial opening to base of caudal fin, latter with an additional 3–4 rows basally; 24–27 transverse scale series, counted forwards and upwards from first anal spine to approximately below sixth dorsal spine; 21–24 scales in a zigzag series around narrowest part of caudal peduncle. Gill rakers on lower limb of first arch, including elongate raker at angle, 10 or 11 (all elements counted).

The following measurements are presented as percentages of the S.L. Head length 29.6–32.1, mean 31.2; snout length 6.2–7.7, mean 6.8; orbit diameter 6.3–6.5, mean 6.4; predorsal length 31.7–33.8, mean 32.6; snout to origin of second dorsal fin 53.6–55.4, mean 54.6; snout to origin of anal fin 57.5–63.5, mean 60.5; body depth at pelvic fin origin 18.0–20.1, mean 19.0; body width just behind operculum 13.5–15.8, mean 14.4; least depth of caudal peduncle 10.0–10.4, mean

10.1; dorsal fin base length 50.1–51.3, mean 50.8; first dorsal spine length 12.7–23.1, mean 18.2; second dorsal spine length 14.1–27.1, mean 20.2; third dorsal spine length 15.6–28.0, mean 22.9; fourth dorsal spine length 15.5–29.0, mean 20.5; anal fin base length 23.7–26.2, mean 25.1; pectoral fin length 23.0–24.7, mean 23.7; pelvic fin length 29.3–32.2, mean 30.9; caudal fin length 31.5–34.2, mean 33.1.

Small elongate fish, head and body moderately compressed. Mouth rather large, gape oblique, jaws nearly equal anteriorly (lower jaw protruding slightly in 70.0 mm S.L. paratype), reaching posteriorly approximately to a vertical through centre or hind margin of pupil; upper lip as broad (vertically at front) as lower. Gill opening extending forwards ventrally to vertically below a point just posterior to hind margin of orbit.

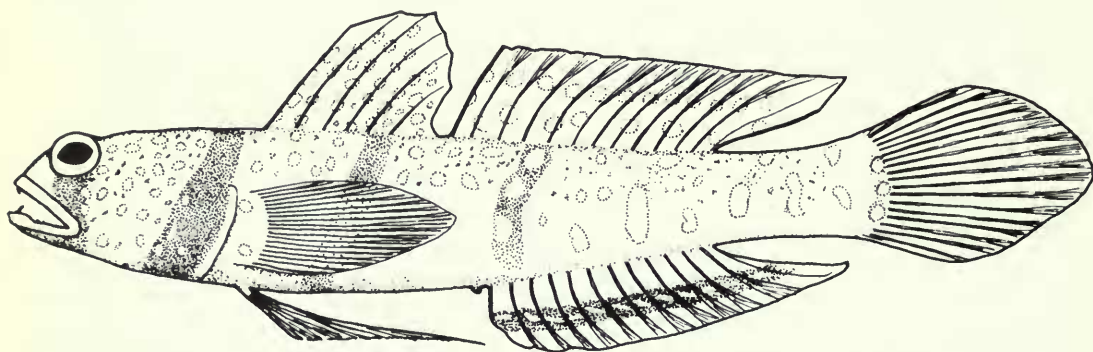


Fig. 1 Diagram showing the live colour pattern of *Amblyeleotris rhyax*, based on the paratype (70.0 mm S.L.) from the Philippine Islands.

Upper jaw with one or two series of fine, sharp, subconical teeth, about three series at symphysis; outer series larger and more caniniform posteriorly, increasingly so anteriorly, with two particularly enlarged teeth anteriorly on each side of jaw. Lower jaw posteriorly with one series of fine, sharp, subconical teeth, about three series at symphysis; outer series larger and more caniniform posteriorly, increasingly so anteriorly with one or two (two on one side in holotype, one in all other cases) greatly enlarged teeth anterolaterally on each side of jaw.

Gill membranes rather narrowly attached at isthmus. Anterior and posterior nostrils separated by a space about equal to width of posterior nostril; posterior nostril oval, about equal in size to round anterior nostril, separated from eye by space about equal to its width; anterior nostril with short membranous tube.

Opercular edge entire, preopercular edge smooth. Scales cycloid anteriorly, becoming ctenoid laterally approximately below hind margin of first dorsal fin. Head almost naked, with a few scales on nape above dorsal angle of branchial opening; midline of nape scaled. Dorsal and anal fins naked; pelvic fins with embedded scales on base; pectoral fins scaled on base; caudal fin with approximately basal seventh scaled.

Sensory papillae on head moderately developed.

Dorsal fin divided into two parts, not connected by membrane; first part with six spines, second, third and fourth spines longest; second part with a single spine followed by branched rays. Anal fin with a single spine followed by branched rays. Origin of anal fin approximately at a vertical below first or second dorsal soft rays. Posterior margins of second dorsal and anal fins pointed. Caudal fin somewhat pointed. Pectoral fins rounded, reaching approximately to anus or to origin of anal fin. Origin of pelvic fins below pectoral fin base; fourth pelvic soft ray longest, reaching to anus or beyond anal fin origin, about three times as long as pelvic spine; fins united by very low membrane, without fraenum.

*Colouration.* In life, head and body whitish, with four bright red vertical to oblique bands and scattered golden spots; first band from below eye, behind posterior tip of jaw to underside of head; second band across part of predorsal area and hind margin of operculum to underside of head; third band from below fifth to sixth dorsal spines to just behind pelvic fin base; fourth band

fainter, from below third to fourth dorsal soft rays to bases of first and second anal rays. First and second vertical bands join a bright red band covering ventral profile of head and body anterior to pelvic fin base. First dorsal fin pale blue with scattered golden spots; second dorsal fin pale blue with golden spots, mostly in two horizontal series. Anal fin pale blue with two horizontal rows of blue spots near base, distally with approximately horizontal golden and dark blue broken lines. Pelvic fins pale blue with a streak of red along inner margin. Pectoral fins hyaline. Caudal fin mainly pale blue, with yellowish tinge along central rays and three to four orange spots at base.

In alcohol, head and body brownish, with bands and spots remaining visible as paler markings. Dorsal, caudal and anal fins pale brown, golden spots becoming hyaline. Pectoral fins hyaline. Pelvic fins brownish.

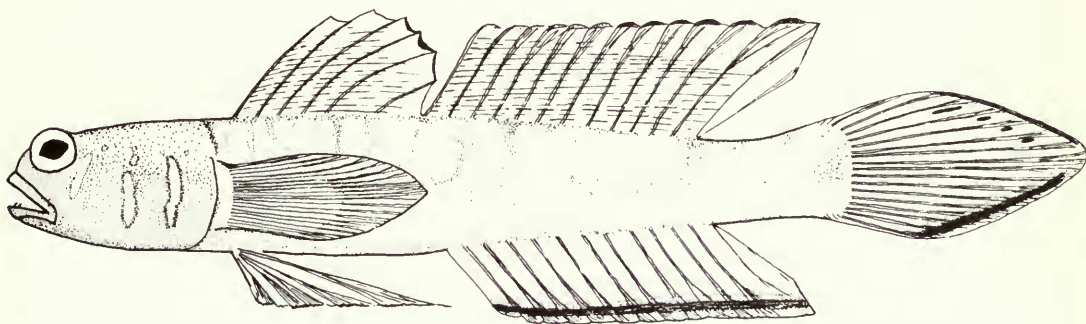


Fig. 2 Diagram showing the live colour pattern of *Amblyeleotris callopareia*, based on the holotype (78.0 mm S.L.) from the Great Barrier Reef.

REMARKS. *Amblyeleotris rhyax* most closely resembles *A. guttata* (Fowler, 1938), but the two species can be easily distinguished by live colouration. In *A. rhyax* there are four bright red vertical bands on the head and body (absent in *A. guttata*), and the golden spots on the body do not continue onto the base of the anal fin (as they do in *A. guttata*); furthermore, the area of charcoal grey colouration which covers the ventral part of the body anterior to the anus in *A. guttata* is absent from *A. rhyax*.

The name *rhyax* is derived from ῥυαξ, Greek for volcano, and refers to the fiery colours of the present species.

HABITAT AND DISTRIBUTION. *Amblyeleotris rhyax* is known from New Britain and the Philippine Islands. It has only been found on outer reef slopes, where it inhabits burrows made by alpheid prawns in sand and rubble at depths usually in excess of 30–40 m.

*Amblyeleotris callopareia* n. sp.

(Fig. 2)

MATERIAL EXAMINED

(a) Holotype, 78.0 mm S.L., at 26 m depth, coarse sand 50–100 m seaward of coral at bottom of reef slope, just east of South Island, Lizard Island, Great Barrier Reef, coll. R. Lubbock on 24.5.1975; BMNH 1978.2.28.1.

(b) Paratype, 68.2 mm S.L., coll. with (a); AMS. I.20689–001.

(c) Paratype, 34.7 mm S.L., coll. with (a); USNM. 218980.

DESCRIPTION. Dorsal fin rays VI+I 12 (last ray divided to base); anal fin rays I 12–13 (last ray divided to base); pectoral fin rays 19–20; pelvic fin rays I 5. 69–75 rows of scales in lateral series from dorsal angle of branchial opening to base of caudal fin, latter with an additional 3–4 rows basally; 21–25 transverse scale series, counted forwards and upwards from first anal spine to approximately below sixth dorsal spine; 19–23 scales in a zigzag series around narrowest part of caudal peduncle. Gill rakers on lower limb of first arch, including elongate raker at angle, 9 or 10 (all elements counted).



The following measurements are presented as percentages of the S.L. Head length 25.8–31.1, mean 28.0; snout length 5.4–6.9, mean 5.9; orbit diameter 5.6–6.9, mean 6.2; predorsal length 31.5–36.3, mean 33.5; snout to origin of second dorsal fin 53.3–57.6, mean 55.3; snout to origin of anal fin 55.2–61.9, mean 59.5; body depth at pelvic fin origin 15.8–18.4, mean 16.8; body width just behind operculum 11.1–13.2, mean 12.3; least depth of caudal peduncle 10.1–10.8, mean 10.4; dorsal fin base length 49.8–54.2, mean 52.5; first dorsal spine length 17.2–18.7, mean 17.8; second dorsal spine length 14.4–20.7, mean 18.3; third dorsal spine length 18.7–21.2, mean 20.2; fourth dorsal spine length 19.3–20.9, mean 20.1; anal fin base length 23.9–30.8, mean 27.6; pectoral fin length 22.4–27.0, mean 24.0; pelvic fin length 26.0–26.8, mean 26.3; caudal fin length 34.7–37.8, mean 35.9.

Small elongate fish, head and body moderately compressed. Mouth rather large, gape oblique, jaws nearly equal anteriorly; upper lip as broad (vertically at front) as lower. Gill opening extending forwards ventrally to vertically below a point approximately one-third of way from hind margin of orbit to posterior margin of operculum.

Upper jaw posteriorly with one or two series of fine, sharp, subconical teeth, about five series at symphysis; outer series larger and more caniniform posteriorly, increasingly so anteriorly, with two particularly enlarged teeth anteriorly on each side of jaw. Lower jaw posteriorly with one or two series of fine, sharp, subconical teeth, about five series at symphysis; outer series larger and more caniniform posteriorly, increasingly so anteriorly, with three particularly enlarged teeth anterolaterally on each side of jaw.

Gill membranes rather narrowly attached at isthmus. Anterior and posterior nostrils separated by a space about twice length of posterior nostril; posterior nostril oval, about  $2\frac{1}{2}$  times size of round anterior nostril, separated from eye by space equal to two-thirds of its length; anterior nostril with short membranous tube.

Opercular edge entire, preopercular edge smooth. Scales cycloid anteriorly, becoming ctenoid laterally approximately below sixth dorsal spine. Head largely naked; midline of nape scaled. Dorsal and anal fins naked; pelvic and pectoral fins with scales on base; caudal fin with approximately basal sixth scaled.

Sensory papillae on head moderately developed.

Dorsal fin divided into two parts, not connected by membrane; first part with six spines, second, third and fourth spines longest; second part with a single spine followed by branched rays. Origin of anal fin approximately at a vertical through first or second dorsal soft rays. Posterior margins of second dorsal and anal fins pointed. Caudal fin somewhat pointed. Pectoral fins rounded, reaching approximately to anus. Origin of pelvic fins below pectoral fin base; fourth pelvic soft ray longest, reaching to anus or anal fin origin, about three times as long as pelvic spine; fins united, with fraenum.

*Colouration.* In life, head and body pale beige with 5 faint vertical to oblique brown bands, and yellow stripes and spots; first band particularly faint, across part of predorsal area above dorsal angle of branchial opening; second band below fifth to sixth dorsal spines; third band below second to fifth dorsal soft rays; fourth band starting from below, and just posterior to, twelfth dorsal soft ray; fifth band on caudal fin base. Irregular scattered spots and patches of brown in between vertical bands. Three more or less vertical golden yellow stripes on head; first stripe from behind centre of hind margin of orbit to half-way down to posterior tip of jaw; second stripe on hind part of preoperculum; third stripe on operculum; a few scattered golden yellow spots above stripes on head; scattered very faint pale yellow spots on body. First dorsal fin very pale beige with very faint horizontal to oblique lines of pale blue and faint orange distal margin, latter most notable between tips of fourth and fifth spines; second dorsal fin similar to first dorsal fin, but with faint dark margin. Anal fin pale greenish beige with black distal margin lined on each side by pale iridescent blue. Pelvic fins pale blue. Pectoral fins hyaline. Caudal fin very pale beige with faint pale blue speckles; ventral margin coloured similarly to distal margin of anal fin; dorsal margin dark, similar to distal margin of second dorsal fin; series of small blue spots posteriorly in upper half of fin, separated from margin by pale bluish band.

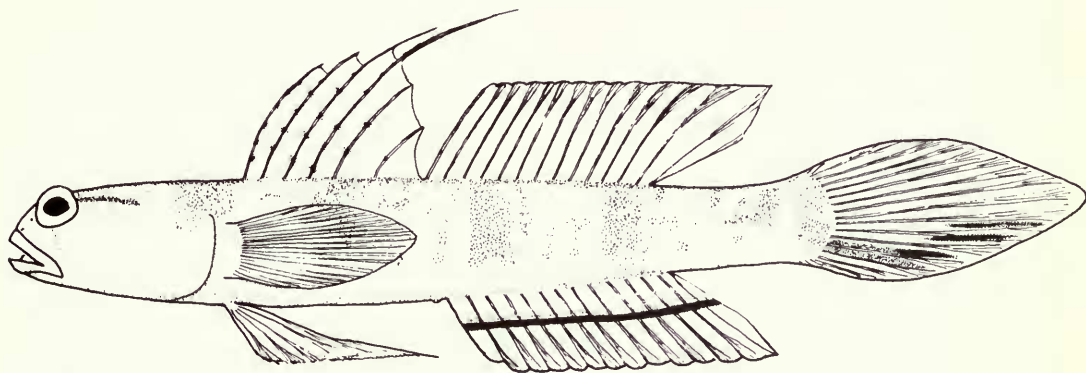
In alcohol, head and body pale beige to brown, with brown bands and markings visible as

patches of darker brown. Dorsal fins pale beige to hyaline, first dorsal fin with orange margin still visible as black area; bands still visible on anal fin in differing shades of brown; pelvic fins brown; pectoral fins hyaline; caudal fin brown with traces of markings still clearly visible.

**REMARKS.** *Amblyeleotris callopareia* most closely resembles *A. macronema*; the two species can easily be distinguished by lateral (97–103 in *A. macronema*; 69–94 in *A. callopareia*) and transverse (29–32 in *A. macronema*; 21–25 in *A. callopareia*) scale counts, and by colouration (golden markings on side of head present in *A. callopareia*, absent in *A. macronema*).

The Greek *καλλοπαρειος* means beautiful-cheeked, and refers to the distinctive colouration on the side of the head.

**HABITAT AND DISTRIBUTION.** *Amblyeleotris callopareia* is known only from the Great Barrier Reef, Australia, where it was collected on sand at the base of the reef slope at a depth of 26 m off Lizard Island. It was in association with burrowing alpheid prawns.



**Fig. 3** Diagram showing the live colour pattern of *Amblyeleotris macronema*, based on the holotype (80.0 mm S.L.) from the Great Barrier Reef.

*Amblyeleotris macronema* n. sp.

(Fig. 3)

**MATERIAL EXAMINED**

(a) Holotype, 80.0 mm S.L., at 26 m depth, coarse sand 50–100 m seaward of coral at bottom of reef slope, just east of South Island, Lizard Island, Great Barrier Reef, coll. R. Lubbock on 24.5.1975; BMNH 1978.2.28.5.

(b) Paratype, 77.8 mm S.L., coll. with (a); AMS. I.20689–002.

(c) Paratype, 51.6 mm S.L., coll. with (a); USNM. 218979.

(d) Paratype, 50.0 mm S.L., coll. with (a); MHNG 1592.51.

**DESCRIPTION.** Dorsal fin rays VI+I 12–13 (last ray divided to base); anal fin rays I 13 (last ray divided to base); pectoral fin rays 16–20; pelvic fin rays I 5. 97–103 rows of scales in lateral series from dorsal angle of branchial opening to base of caudal fin, latter with an additional 4–6 rows basally; 29–32 transverse scale series, counted forwards and upwards from first anal spine to approximately below sixth dorsal spine; 26–27 scales in a zigzag series around narrowest part of caudal peduncle. Gill rakers on lower limb of first arch, including elongate raker at angle, 9 or 10 (all elements counted).

The following measurements are presented as percentages of the S.L. Head length 25.8–29.6, mean 27.8; snout length 5.0–7.4, mean 6.2; orbit diameter 5.8–6.4, mean 6.1; predorsal length 28.7–33.9, mean 31.4; snout to origin of second dorsal fin 51.1–55.6, mean 53.8; snout to origin of anal fin 55.0–57.9, mean 56.8; body depth at origin of pelvic fin 15.0–17.6, mean 16.6; body width just posterior to operculum 10.2–11.2, mean 10.6; least depth of caudal peduncle 9.0–9.8, mean 9.2; dorsal fin base length 52.3–56.0, mean 53.9; first dorsal spine length 14.7–16.4, mean 15.5; second dorsal spine length 18.6–27.2, mean 20.9; third dorsal spine length 30.4–42.8, mean

33·7; fourth dorsal spine length 31·2–39·2, mean 35·0; anal fin base length 27·8–30·2, mean 29·0; pectoral fin length 20·4–22·2, mean 21·4; pelvic fin length 26·0–30·6, mean 27·7; caudal fin length 35·3–41·0, mean 37·4.

Small elongate fish, head and body moderately compressed. Mouth rather large, gape oblique, jaws nearly equal anteriorly (lower jaw protruding slightly in holotype), reaching posteriorly approximately to a vertical through centre of pupil (behind centre of pupil in larger specimens; anterior to centre of pupil in smaller specimens); upper lip as broad (vertically at front) as lower. Gill opening extending forwards ventrally to vertically below a point just posterior to hind margin of orbit.

Upper jaw posteriorly with one or two series of fine, sharp, subconical teeth, about five series at symphysis; outer series slightly larger and more caniniform posteriorly, increasingly so anteriorly, with 2–3 greatly enlarged teeth anteriorly in each side of jaw. Lower jaw posteriorly with one series of fine, sharp, subconical teeth, about four series at symphysis; outer series slightly larger and more caniniform posteriorly, increasingly so anteriorly, with a single particularly enlarged recurved canine anterolaterally on each side of jaw.

Gill membranes rather narrowly attached at isthmus. Anterior and posterior nostrils separated by space about three times width of posterior nostril; posterior nostril round, larger than round anterior nostril, separated from eye by space about equal to twice its width; anterior nostril with short membranous tube.

Opercular edge entire, preopercular edge smooth. Scales cycloid anteriorly, becoming ctenoid laterally between sixth dorsal spine and hind margin of first dorsal fin. Head almost naked, with a few scales on nape above dorsal angle of branchial opening; midline of nape not scaled. Dorsal and anal fins naked; pelvic fins mostly naked, with a few embedded scales on base; pectoral fins mostly naked, with a few embedded scales near ventral margin of base; caudal fin with approximately basal sixth scaled.

Sensory papillae on head moderately developed.

Dorsal fin divided into two parts, not connected by membrane; first part with six spines, third and fourth spines longest; second part with a single spine followed by branched rays. Anal fin with a single spine followed by branched rays. Origin of anal fin approximately at a vertical through second soft dorsal ray. Posterior margins of second dorsal and anal fins somewhat angular. Caudal fin lanceolate. Pectoral fins rounded, reaching about nine-tenths of way to anal fin origin. Origin of pelvic fins below pectoral fin base; fourth pelvic soft ray longest, reaching to just beyond anus or to origin of anal fin, about three times as long as pelvic spine; fins united, with low fraenum over approximately basal fifth of fins.

*Colouration.* In life, head and body pale beige, with 5 faint brown vertical bands; first band across part of predorsal area, continuing onto dorsal part of operculum; second band below fifth and sixth dorsal spines, fading ventrally; third band below second to fifth dorsal soft rays; fourth band below tenth to twelfth soft dorsal rays; fifth band on caudal fin base. Scattered patches of pale brown between vertical bands. Brown band along midline of ventral profile of head, lined with pale blue; a few pale blue spots on and above preoperculum. First dorsal fin very pale beige with pale blue and orange spots, latter arranged regularly along spines and becoming brighter distally; second dorsal fin very pale beige with a few orange spots along anterior and distal margins. Anal fin pale bluish hyaline distally, pale beige along base, the two colours separated by iridescent pale blue band and broad horizontal black stripe. Pelvic fins pale bluish hyaline. Pectoral fins hyaline. Caudal fin very pale beige, ventral half with dark streaks lined with pale blue, dorsal half with faint orange margin and scattered pale blue spots near upper edge.

In alcohol, head and body pale beige with brown bands and patches still visible. Spots on dorsal fins scarcely visible; black stripe on anal fin remains striking; pelvic and pectoral fins hyaline; black streaks on lower half of caudal fin remain visible

**REMARKS.** *Amblyeleotris macronema* is close to *A. callopareia*; for a comparison between the two species see 'Remarks' under *A. callopareia*.

The name *macronema* comes from the Greek μακρος (=long) and νημα (=thread), and refers to the long spines of the first dorsal fin.



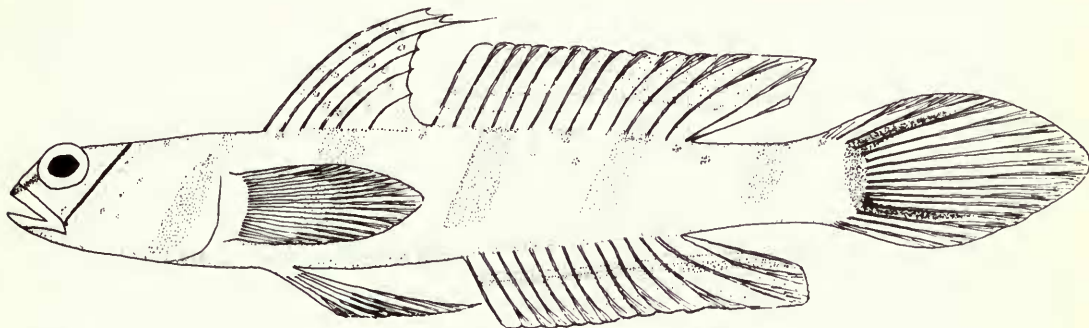
**HABITAT AND DISTRIBUTION.** *Amblyeleotris macronema* is known from Lizard Island, Great Barrier Reef, where it was found on coarse sand at the base of the reef slope at a depth of 26 m; it lives in association with burrowing alpheid prawns.

*Amblyeleotris diagonalis* n. sp.

(Fig. 4)

**MATERIAL EXAMINED**

(a) Holotype, 37.5 mm S.L., at 25 m depth on coarse sand 10–30 m seaward of coral at bottom of reef slope, just east of South Island, Lizard Island, Great Barrier Reef, coll. R. Lubbock on 23.5.1975; BMNH 1978.2.28.2.



**Fig. 4** Diagram showing the live colour pattern of *Amblyeleotris diagonalis*, based on the paratype (59.5 mm S.L.) from the Andaman Sea.

- (b) 2 Paratypes, 44.1–51.9 mm S.L., coll. with (a); AMS. I.20690–001.  
 (c) 2 Paratypes, 45.9–56.0 mm S.L., on sand on reef flat at 6 m depth, southeast side of Nossi Iranja, northwest Madagascar, coll. N. Polunin on 9.7.1973; MHNG 1592.49–50.  
 (d) Paratype, 39.1 mm S.L., sand adjacent to coral reef at 17 m depth, south side of Tany Kely Island, Nossi Bé, Madagascar, coll. N. Polunin on 30.6.1973; BMNH 1978.2.28.3.  
 (e) Paratype, 32.0 mm S.L., on sand next to rock at 20 m depth, Lively Rocks, Trincomalee, Sri Lanka, coll. J. E. Randall on 3.4.1975; BPBM 18821.  
 (f) 2 Paratypes, 36.2–39.7 mm S.L., on rubble and sand at 10 m depth, north side of Fort Frederick Peninsula, Trincomalee, Sri Lanka, coll. J. E. Randall on 3–5.4.1975; BPBM 18821.  
 (g) Paratype, 59.5 mm S.L., on rubble and sand interspersed with coral at 30 m depth, west point of Born (Perforated) Island, eastern Andaman Sea, coll. N. Polunin & R. Lubbock on 8.3.1977; USNM. 218981.

**DESCRIPTION.** Dorsal fin rays VI + I 13 (last ray divided to base); anal fin rays I 13 (last ray divided to base); pectoral fin rays 19–20; pelvic fin rays I 5. 67–75 rows of scales in lateral series from dorsal angle of branchial opening to base of caudal fin, latter with an additional 4–5 rows basally; 23–24 transverse scale series, counted forwards and upwards from first anal spine to approximately below sixth dorsal spine; 19–22 scales in a zigzag series around narrowest part of caudal peduncle. Gill rakers on lower limb of first arch, including elongate raker at angle, 8–10 (all elements counted).

The following measurements are presented as percentages of the S.L. Head length 26.7–29.9, mean 27.9; snout length 5.7–6.9, mean 6.4; orbit diameter 6.7–8.2, mean 7.5; predorsal length 32.2–34.4, mean 33.1; snout to origin of second dorsal fin 52.1–54.6, mean 53.5; snout to origin of anal fin 55.9–57.4, mean 56.8; body depth at pelvic fin origin 15.8–19.6, mean 17.3; body width just behind operculum 11.0–12.8, mean 11.7; least depth of caudal peduncle 9.3–10.9, mean 10.2; dorsal fin base length 49.1–55.6, mean 52.4; first dorsal spine length 16.6–29.2, mean 22.6;

second dorsal spine length 17.4–27.7, mean 23.5; third dorsal spine length 16.5–28.0, mean 21.9; fourth dorsal spine length 13.0–20.6, mean 17.0; anal fin base length 27.2–30.0, mean 28.5; pectoral fin length 21.5–26.1, mean 23.9; pelvic fin length 29.4–33.1, mean 30.8; caudal fin length 29.6–42.1, mean 34.6.

Small elongate fish, head and body moderately compressed. Mouth rather large, gape oblique, jaws nearly equal anteriorly, reaching posteriorly approximately to a vertical through centre of pupil; upper lip as broad (vertically at front) as lower. Gill opening extending forwards ventrally to vertically below a point one-quarter of way from hind margin of orbit to posterior edge of preoperculum.

Upper jaw posteriorly with two series of fine, sharp, subconical teeth, about four series at symphysis; outer series larger and more caniniform posteriorly, increasingly so anteriorly, with three to four particularly enlarged teeth anteriorly in each side of jaw. Lower jaw posteriorly with one series of fine, sharp, subconical teeth, about five series at symphysis; outer series generally larger and more caniniform, especially anteriorly, with four particularly enlarged teeth anteriorly in outer series, and three to four particularly enlarged teeth anterolaterally in inner series, in each side of jaw.

Gill membrane rather narrowly attached at isthmus. Anterior and posterior nostrils separated by a space about equal to width of posterior nostril; posterior nostril oval, about equal in size to round anterior nostril, separated from eye by space slightly less than its width; anterior nostril with short membranous tube.

Opercular edge entire, preopercular edge smooth. Scales cycloid anteriorly, becoming ctenoid laterally approximately below origin of dorsal fin. Head almost naked, with a few scales on nape above dorsal angle of branchial opening; midline of nape scaled. Dorsal and anal fins naked; pelvic fins with embedded scales on base; pectoral fins scaled on base; caudal fin with approximately basal fifth scaled.

Sensory papillae on head moderately developed.

Dorsal fin divided into two parts, not connected by membrane; first part with six spines, first, second and third spines longest; second part with a single spine followed by branched rays. Anal fin with single spine followed by branched rays. Origin of anal fin approximately at a vertical below first to second dorsal soft rays. Posterior margins of second dorsal and anal fins pointed. Caudal fin somewhat pointed. Pectoral fins rounded, reaching approximately to just beyond anus. Origin of pelvic fins below pectoral fin base; fourth pelvic soft ray longest, usually marginally longer than fifth, reaching to bases of first to third anal soft rays, about three times as long as pelvic spine; fins united by a very low membrane, without fraenum.

*Colouration.* In life, head and body whitish, becoming greyish dorsally, with six oblique brown bands; first band narrower and darker than others, from nape to posterior tip of maxilla; second band from predorsal area across operculum; third band from bases of fifth and sixth dorsal spines; fourth band from bases of third and fourth dorsal soft rays; fifth band from bases of tenth to twelfth dorsal soft rays; sixth band on caudal peduncle, anterior to caudal fin base. Pale iridescent blue narrow lines on preoperculum, operculum and nape, mostly adjacent and parallel to first and second oblique brown bands. Traces of brown, mostly spots, dorsally between oblique body bands; thin brown lines from each eye anteriorly to tip of snout. First dorsal fin whitish hyaline, with small red spots margined with pale blue; second dorsal fin yellowish basally with faint blue markings, distal half pale brownish hyaline. Anal fin with light yellowish basal band, separated from greyish hyaline distal half by one blue and one red (distally) line. Pelvic fins whitish with faint blue and red tinges. Pectoral fins hyaline. Caudal fin yellowish with faint pale blue spots, and brown crescent formed by faint brown bar just posterior to base of fin extending ventrally and dorsally towards hind margin of fin.

In alcohol, head and body pale beige, with bands, lines on snout, and spots pale to dark brown. Dorsal, caudal, pectoral and pelvic fins largely hyaline. Anal fin mostly hyaline, with blue and red horizontal lines turning dark brown.

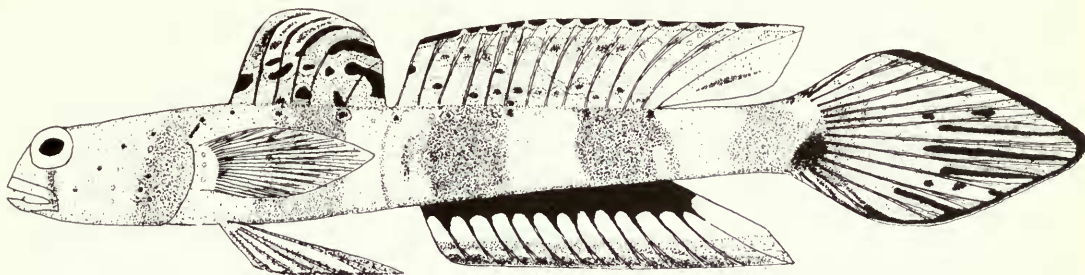
REMARKS. *Amblyeleotris diagonalis* is close to *A. steinitzi* (Klausewitz, 1974) and *A. japonica* Takagi, 1957, but may easily be distinguished by colouration. In *A. diagonalis* there is a con-



spicuous, narrow, dark brown band from the nape to the posterior tip of the maxilla; this is absent in both *A. steinitzi* and *A. japonica*.

The Latin name *diagonalis* refers to the oblique bands on the body.

**HABITAT AND DISTRIBUTION.** *Amblyeleotris diagonalis* has a wide distribution, having been collected in Madagascar, Sri Lanka and the Andaman Sea, and also on the Great Barrier Reef. It occurs in sandy habitats, where it lives symbiotically with burrowing alpheid prawns.



**Fig. 5** Diagram showing the live colour pattern of *Amblyeleotris latifasciata*, based on the holotype (65.1 mm S.L.) from the Philippine Islands.

*Amblyeleotris latifasciata* n. sp.

(Fig. 5)

**MATERIAL EXAMINED**

- (a) Holotype, 65.1 mm S.L., at 15 m depth, on rubble at a distance of 10 m from nearest coral, passage between Cabulan Island and Vandanon Island, Cebu Strait, Philippine Islands, coll. R. Lubbock on 21.8.1976; BMNH 1978.2.28.4.  
 (b) Paratype, 75.3 mm S.L., on sand and rubble at 10–25 m depth, north side of Chuang Island, off Samae San, Sattahip, Gulf of Thailand, coll. N. Polunin & R. Lubbock on 15.3.1977; AMS. I.20691–001. (c) Paratype, 67.2 mm S.L., coll. with (b); USNM. 218982.

**DESCRIPTION.** Dorsal fin rays VI+I 13 (last ray divided to base); anal fin rays I 13 (last ray divided to base); pectoral fin rays 20; pelvic fin rays I 5. 87–92 rows of scales in lateral series from dorsal angle of branchial opening to base of caudal fin, latter with an additional 3–5 rows basally; 29–30 transverse scale series, counted forwards and upwards from first anal spine to approximately below sixth dorsal spine; 25 scales in a zigzag series around narrowest part of caudal peduncle. Gill rakers on lower limb of first arch, including elongate raker at angle, 9 or 10 (all elements counted).

The following measurements are presented as percentages of the S.L. Head length 26.7–27.4, mean 27.1; snout length 5.2–5.3, mean 5.2; orbit diameter 6.1–6.2, mean 6.1; predorsal length 30.7–33.4, mean 32.2; snout to origin of second dorsal fin 50.3–53.2, mean 51.8; snout to origin of anal fin 52.8–55.2, mean 54.2; body depth at pelvic fin origin 15.0–16.0, mean 15.4; body width just posterior to operculum 10.5–11.3, mean 10.8; least depth of caudal peduncle 9.0–9.5, mean 9.2; dorsal fin base length 54.7–55.6, mean 55.0; first dorsal spine length 13.0–19.9, mean 16.6; second dorsal spine length 13.6–18.1, mean 16.3; third dorsal spine length 16.2–19.3, mean 17.3; fourth dorsal spine length 15.5–18.0, mean 16.8; anal fin base length 31.8–33.9, mean 32.7; pectoral fin length 19.9–22.7, mean 21.6; pelvic fin length 24.7–26.4, mean 25.4; caudal fin length 36.7–40.1, mean 37.9.

Small elongate fish, head and body moderately compressed. Mouth rather large, gape oblique, jaws nearly equal anteriorly, reaching posteriorly to a vertical through posterior margin of pupil; upper lip as broad (vertically at front) as lower. Gill opening extending forwards ventrally to a point vertically below hind margin, or just posterior to hind margin, of orbit.

Upper jaw posteriorly with two series of fine, sharp, subconical teeth, about five series at

symphysis; outer series slightly larger and more caniniform posteriorly, increasingly so anteriorly; low notched ridge on vomer. Lower jaw posteriorly with one or two series of fine, sharp, sub-conical teeth, about five series at symphysis; outer series slightly larger and more caniniform posteriorly, increasingly so anteriorly, and with a single particularly enlarged caniniform tooth anterolaterally on each side of jaw.

Gill membranes rather narrowly attached at isthmus. Anterior and posterior nostrils separated by space about equal to length of posterior nostril; posterior nostril round to oval, slightly larger than round anterior nostril, separated from eye by space about equal to its length; anterior nostril with short membranous tube.

Opercular edge entire, preopercular edge smooth. Scales cycloid anteriorly, becoming ctenoid laterally approximately below third soft dorsal ray. Head naked; midline of nape not scaled. Dorsal and anal fins naked; pelvic fins mostly naked, a few embedded scales on base; pectoral fins mostly naked, possibly a few scales close to base; caudal fin with approximately basal sixth scaled.

Sensory papillae moderately developed.

Dorsal fin divided into two parts, not connected by membrane; first part with six spines, first, second, third and fourth spines longest; second part with a single spine followed by branched rays. Origin of anal fin at a vertical through base of second dorsal soft ray. Posterior margins of second dorsal and anal fins angular. Caudal fin rather pointed. Pectoral fins rounded, reaching about nine-tenths of way to anal fin origin. Origin of pelvic fins below pectoral fin base; third and fourth pelvic soft rays longest (approximately equal in length in holotype, fourth ray longest in both paratypes), reaching to or beyond anal fin origin, about four times as long as pelvic spine; fins united, with low fraenum over approximately basal fifth of fins.

*Colouration.* In life, head and body pale grey to brownish, with 5 copper-coloured broad vertical bands and with scattered pale blue and orange spots; first band across part of predorsal area and hind margin of operculum; second band from below fourth to sixth dorsal spines to just behind pelvic fin base; third band from below second to fifth dorsal soft rays to bases of first to fourth anal soft rays; fourth band from below ninth to twelfth dorsal soft rays to bases of ninth to twelfth anal soft rays; fifth band on caudal peduncle. Pale blue spots mainly on preoperculum, operculum, and along dorsal profile of head and body; orange spots mainly on operculum, nape, and anterior part of body between first and second, and second and third vertical bands. First dorsal fin pale brownish with red spots edged with pale blue; second dorsal fin pale brownish with broken horizontal pale blue lines and with two rows of orange spots, upper row along distal margin of fin, lower row near base of fin; one bright red spot between penultimate and ultimate dorsal fin rays. Anal fin with brown base, separated from a horizontal submarginal red stripe by a band of pale blue; distal margin brownish, lined interiorly with pale blue. Pelvic fins brownish with streaks of pale blue. Pectoral fins hyaline. Caudal fin pale brownish, darker basally, with bright red margin lined interiorly with pale blue dorsally and exteriorly with pale blue ventrally; up to about ten bright red spots edged with light blue, some of spots merging with red margin.

In alcohol, head and body pale brown with bands largely discernible as areas of darker brown; orange and blue spots remain visible as pale spots, the former ringed with darker brown. Fins brownish with markings usually visible as paler areas.

**REMARKS.** *Amblyeleotris latifasciata* is close to *A. aurora* (Polunin & Lubbock, 1977) and *A. sungami* (Klausewitz, 1969). It can be distinguished from *A. aurora* by the number of soft anal rays (13 in *A. latifasciata*; 14 in *A. aurora*), by certain morphometric characters (head length 26.7–27.4% of S.L. in *A. latifasciata*, 23.2–26.5% in *A. aurora*; length of third dorsal spine 16.2–19.3% of S.L. in *A. latifasciata*, 10.0–16.9% in *A. aurora*; length of caudal fin 36.7–40.1% of S.L. in *A. latifasciata*, 27.4–34.5% in *A. aurora*), and by colouration, notably the colour of the body bands (coppery brown in *A. latifasciata*, pink in *A. aurora*). *A. latifasciata* is readily distinguishable from *A. sungami* by the lateral scale count (87–92 in *A. latifasciata*; 102–108 in *A. sungami*) and by details of colouration; amongst the latter are to be noted the width of the body bands (broad in *A. latifasciata*; narrow in *A. sungami*), and the absence of an elaborate colour pattern on the caudal fin of *A. sungami* (present in *A. latifasciata*). *A. sungami* is only known

from the Red Sea, *A. aurora* from the Indian Ocean and *A. latifasciata* from the western Pacific Ocean.

The Latin name *latifasciata* is derived from the words *latus* (= broad) and *fasciatus* (= banded) and refers to the breadth of the bands on the body, which serve to distinguish this species from many related forms.

**HABITAT AND DISTRIBUTION.** *Amblyeleotris latifasciata* is known from the Gulf of Thailand and the Philippine Islands, where it was collected on sand and rubble at depths of 10–25 m; it lives in symbiosis with burrowing alpheid prawns.

### Acknowledgements

For much advice on goby taxonomy we thank D. F. Hoese of the Australian Museum, Sydney. R. L. thanks Gray Cutlack and Brian Parkinson for help with fieldwork in Rabaul, and Johnny Kiener for help in Cebu. N. V. C. P. once more expresses gratitude to Nigel and Gwen Cornfield for facilities on the yacht *Marimba*. We are both grateful to Jeff Farrell, Jerry Welch and Adrian Lamb, who all contributed greatly to the success of our collecting trip in Thailand. We thank P. J. P. Whitehead of the British Museum (Natural History) for reviewing the manuscript.

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